

REMARKS

Status of the Claims

Claims 1, 5, 7-8, 12, and 14-22 are currently pending in the application. By this Amendment, claims 1, 8, and 18 have been amended, and claims 6 and 13 have been cancelled. Support for these claim amendments can be found in the originally filed specification, for example page 14, lines 5-10; and page 15, lines 5-10. No new matter has been added.

Rejected Under 35 U.S.C. 112

Claims 1, 5-8 and 12-22 are rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the written description for the reasons set forth at page 2 of the Office Action. Claims 6 and 18 have been cancelled, thereby rendering their rejections moot.

Regarding part A, Applicants have corrected the typographical error and amended the structure of (b)(ii) such that X^1 is no longer divalent and is bonded to both R^1 and P.

Applicants disagree with the Examiner's rationale regarding part B; however, in order to advance prosecution, claims 1, 8, and 18 have been amended to recite "wherein R^a is an alkyl group having from 12 to 18 carbon atoms." Furthermore, one of ordinary skill in the art would know, at least by a Google Patent search of the tradename, that HiTEC®-059 is a dimethyloctadecylphosphonate available from Afton Chemical Corporation (formerly Ethyl Corporation), which has an alkyl group containing 18 carbon atoms. For example, U.S. Patent Publication No. 2005/0202979 describes the composition of HiTEC®-059 at para. [0117] – "HiTEC®-059 is a

dimethyloctadecylphosphonate available from Ethyl Corporation.” Accordingly, the recited endpoint of 18 is fully supported by the originally filed specification, and the rejection is moot. Reconsideration and withdrawal of the rejection are respectfully requested.

Rejections Under 35 U.S.C. § 103

Cook in view of Burjes, STN Structure, and Papay

Claims 1, 4-5, 7-8 and 11-20 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Cook et al. (U.S. Publication No. 2002/0119895 hereinafter, “Cook”) in view of Burjes et al. (U.S. Patent No. 4,755,311 hereinafter, “Burjes”), STN structure, and Papay et al. (U.S. Patent No. 4,293,432 hereinafter, “Papay”) for the reasons set forth at pages 3-7 of the Office Action. Claim 13 has been cancelled, thereby rendering its rejection moot. This rejection is traversed for at least the reasons of records, as well as those below.

The Examiner has argued that “it would have been obvious to one of ordinary skill in the art at the time of the instantly claimed invention to use the instantly claimed component c in the composition of Cook et al. because Cook, section [0114], discloses the use of phosphorus esters including those of phosphonic acid as ‘wear/extreme pressure agents’ [and] Papay...shows these phosphonates to ‘significantly reduce’ friction which will clearly reduce wear since friction is the main source of wear and thus the phosphonates of Papay...are encompassed by section [0114] of Cook.” See page 5 of the Office Action. Applicants respectfully disagree.

One of ordinary skill in the art at the time the invention was made would understand that “extreme pressure (EP)/antiwear (AW) agents” and “friction modifiers

(FMs)" are distinct categories of additives and are not necessarily interchangeable. This distinction is well understood by those in the art. Specifically, one skilled in the art would understand that EP/AWs and FMs are functionally different in the art, and that friction is not the main cause of wear. In fact, a skilled person could easily find papers which describe friction increasing because an AW additive was included in a lubricant. Thus, contrary to the Examiner's position, one of ordinary skill in the art at the time of the present invention was made would not use the instantly claimed component c in the composition of *Cook* as a friction modifier.

The Examiner has also argued that Applicants' results are not seen as being unexpected because "the argued antiwear compounds of the cited...art are expected to give improved load carrying capacity in that wear is proportional to load and something that decreases wear is expected to increase load carrying capacity....*Cook* discloses the instantly claimed (b)(i) and (b)(ii) as being antiwear/extreme pressure agents, which is expected to give the instantly claimed improved load carrying capacity because improved wear resistance coupled with greater pressure withstanding implied by 'extreme pressure' agents gives 'improved load carrying capacity.'" See page 13 of the present Office Action. Applicants disagree.

Cook discloses that a thiosphosphorus acid or salt thereof and a phosphorus-containing carboxylic ester can both be a phosphorus or boron containing antiwear/extreme pressure agent. See paras. [0121] and [0164] of *Cook*. If the Examiner's position was correct, then all AW agents would be the same and give the same improved load carrying capacity. However, Applicants have shown that this is not the case. Applicants have shown that a phosphorus containing ester (e.g., AW2, an

alkyl thiophosphate ester) does not improve load carrying capacity, whereas instantly claimed (b)(i) and (b)(ii) (e.g., AW3) improves load carrying capacity. See Tables 1 and 2 on page 22 of the present specification.

For example, Examples 2, 3, 5, and 9 showed that oils containing AW2 and other additives did not improve the load carrying capacity of the oil. In fact, all Timken load results for Examples 2, 3, 5, and 9 were less than Example 1, which only contained EP1. See Table 2 on page 22 of the present specification. However, Examples 10 through 16 showed that oils containing AW3 and other additives all improved the load carrying capacity of the oil. That is, Examples 10-16 demonstrated Timken load results greater than 90 lbs – e.g., results greater than Examples 1, 2, 3, 5, and 9. See *id.* This result is unexpected at least because according to the Examiner's rationale, all AW agents would be the same and give the same improved load carrying capacity, and Applicants have shown that this is not the case. The results are also commensurate in scope with the full teachings of *Cook*, particularly the paragraphs noted above, and with the instant claims.

Moreover, neither *Burjes*, *Papay*, nor *STN Structure* overcome the deficiencies in *Cook*. In particular, none of *Burjes*, *Papay*, or *STN Structure* provide any teaching or suggestion that a particular AW agent, much less specifically instantly claimed (b)(i) and (b)(ii), would provide better load carrying capacity results than another AW agent. Applicants note that *Burjes* and *Papay* do not discuss instantly claimed (b)(i) and (b)(ii), much less the load carrying capacity properties thereof, and *STN Structure* is silent in this aspect as well.

For at least the foregoing reasons, the claimed invention is unobvious in light of the combination of references. Reconsideration and withdrawal of the rejection is respectfully requested.

Cook in view of Burjes, STN Structure, and Norman

Claim 6 is rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Cook* in view of *Burjes* and *STN Structure* as applied to claims 1, 4-5, 7-8 and 11-20, and further in view of *Norman et al.* (U.S. Patent No. 5,942,470 hereinafter, "*Norman*") for the reasons set forth at pages 7-8 of the Office Action. Claim 6 has been cancelled, thereby rendering its rejection moot. However, because the subject matter of claim 6 has been incorporated into independent claim 1, Applicants provide the following response.

Applicants note that *Norman* does not disclose "0.1-20% friction modifier," as the Examiner contends on page 7 of the Office Action. Rather, *Norman* discloses 1-20% of a particular succinimide, not of a general "friction modifier." See Abstract and col. 11, line 38 – col. 12, line 55 of *Norman*. However, present claim 1 recites about 10 to about 30 wt. % of a long chain alkyl phosphonate friction modifying compound represented by the formula recited therein, which is absent from *Norman*.

Moreover, the Examiner has admitted, as discussed above, that *Cook* "discloses the use of phosphorus esters including those of phosphonic acid as 'wear/extreme pressure agents,'" which are not the same as friction modifiers for the reasons discussed above. Accordingly, contrary to the Examiner's position, one skilled in the art would not use the same amount of friction modifier in *Cook* as in *Norman*. The ranges disclosed in *Norman* apply to succinimides, not phosphonates, and the Examiner has

not pointed to a legitimate reason why one skilled in the art would consider succinimides and phosphonates to be equivalent or should be used in equivalent amounts.

For at least the foregoing reasons, the claimed invention is unobvious in light of the combination of references. Reconsideration and withdrawal of the rejection is respectfully requested.

Cook in view of Burjes, STN Structure, Papay, and Laing

Claims 21-22 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Cook* in view of *Burjes*, *STN Structure*, and *Papay*, and further in view of *Laing et al.* (U.S. Patent No. 4,710,100 hereinafter, "*Laing*") for the reasons set forth at page 8 of the Office Action.

Claims 21-22 depend from independent claim 8 and are patentable for the same reasons discussed above. In particular, one of ordinary skill in the art at the time the invention was made would understand that "extreme pressure (EP)/antiwear (AW) agents" and "friction modifiers (FMs)" are distinct categories of additives and are not necessarily interchangeable. This distinction is well understood by those in the art. Thus, contrary to the Examiner's position, one of ordinary skill in the art at the time of the present invention was made would not use the instantly claimed component c in the composition of *Cook* as a friction modifier.

Moreover, *Cook* discloses that a thiosphosphorus acid or salt thereof and a phosphorus-containing carboxylic ester can both be a phosphorus or boron containing antiwear/extreme pressure agent. See paras. [0121] and [0164] of *Cook*. If the Examiner's position was correct that conventional additives will impart their known and usual properties, then all AW agents would be the same and give the same improved

load carrying capacity. See page 12 of the Office Action. However, Applicants have shown that this is not the case. Applicants have shown that a phosphorus containing ester (e.g., AW2, an alkyl thiophosphate ester) does not improve load carrying capacity, whereas instantly claimed (b)(i) and (b)(ii) (e.g., AW3) improves load carrying capacity. See Tables 1 and 2 on page 22 of the present specification.

For example, Examples 2, 3, 5, and 9 showed that fluids containing AW2 and other additives did not improve the load carrying capacity of the oil. In fact, all Timken load results for Examples 2, 3, 5, and 9 were less than Example 1, which only contained EP1. See Table 2 on page 22. However, Examples 10 through 16 showed that fluids containing AW3 and other additives improved the load carrying capacity of the oil. That is, Examples 10-16 demonstrated Timken load results greater than 90 lbs – e.g., results greater than Examples 1, 2, 3, 5, and 9. See *id.* This result is unexpected at least because according to the Examiner's rationale, all AW agents would be the same and give the same improved load carrying capacity, and Applicants have shown that this is not the case. The results are also commensurate in scope with the full teachings of *Cook*, particularly the paragraphs noted above, and with the instant claims.

Moreover, neither *Burjes*, *Papay*, nor *STN Structure* overcome the deficiencies in *Cook*. In particular, none of *Burjes*, *Papay*, or *STN Structure* provides any teaching or suggestion that a particular AW agent, much less specifically instantly claimed (b)(i) and (b)(ii), would provide better load carrying capacity results than another AW agent. Applicants note that *Burjes* and *Papay* do not discuss instantly claimed (b)(i) and (b)(ii), much less the load carrying capacity properties thereof, and *STN structure* is silent in this aspect as well.

Further, *Laing* does not overcome the deficiencies of *Cook* in view of *Burjes*, *STN Structure*, and *Papay* for the same reasons – that is, the reference fails to provide any teaching or suggestion that a particular AW agent, much less specifically instantly claimed (b)(i) and (b)(ii), would provide better load carrying capacity results than another AW agent. For at least the foregoing reasons, the present invention is unobvious in light of the combination of *Cook*, *Burjes*, *STN Structure*, *Papay*, and *Laing*. Reconsideration and withdrawal of the rejection are respectfully requested.

CONCLUSION

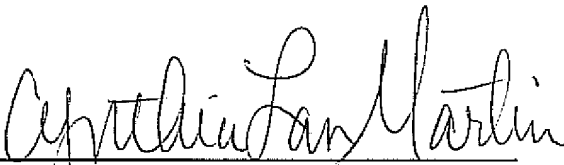
In view of the foregoing remarks, Applicants submit that this claimed invention, as amended, is not rendered obvious in view of the cited references applied against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 50-2961.

Respectfully submitted,

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